



STATE REPRESENTATIVE  
**GARY HEBL**  
46TH ASSEMBLY DISTRICT

**MEMO**

TO: Members of the Assembly State Affairs and Homeland Security Committee  
FROM: Representative Gary Hebl  
DATE: December 3, 2009  
RE: Assembly Bill 556, relating to establishing a state microbe

The bill before the committee today, Assembly Bill 556, is a virtually cost free way to promote two of Wisconsin's most important industries, biotechnology and agriculture. By adding *Lactococcus Lactis* to our list of state symbols, this bill would make Wisconsin the first state in the nation to adopt a state microbe. *Lactococcus Lactis* is the chief starter culture for a variety of cheeses and other dairy products and is also being engineered to improve vaccine delivery.

This simple bill is a valuable tool to broadcast Wisconsin's many strengths to the world, including our:

- Tax credits and investment incentives for high tech businesses under the Accelerate Wisconsin program
- \$18 billion per year cheese making industry
- Highly qualified workforce, educated at the University of Wisconsin

Additionally, this bill will create an educational opportunity for our youth to be exposed to the importance of biotechnology in our state, further encouraging our students to pursue degrees in high-demand, high-tech fields.

Assembly Bill 556 has received the support of the University of Wisconsin – Madison as well as BioForward, the state association for Wisconsin's biotechnology industry.

Good afternoon. My name is Regina Whitemarsh, and I am a senior at the University of Wisconsin-Madison majoring in Microbiology. I am also president of the UW's Microbiology Club.

I am here today in support of the state of Wisconsin adopting a microbe, *Lactococcus lactis*, as a new state symbol. This state microbe will serve as a living symbol of the culture and heritage of Wisconsin and will reflect the contributions of the cheese industry to our state's economy.

Microorganisms are all around us. You can't see them, but we are surrounded. It is due to their small size and the misconception that all bacteria cause disease that bacteria are largely underappreciated. In reality, few bacteria cause disease while the vast majority are harmless and even beneficial to us both in terms of human health and commercial applications. Adopting a state microbe would educate people about the importance and value of microorganisms. Additionally, a state microbe will bring focus to Wisconsin's preeminence in microbiology research and education.

The proposed bacterium, *Lactococcus lactis*, is principally involved in the production of foods that have made Wisconsin famous, namely cheeses including Cheddar, Monterey Jack, Gouda, Edam, Muenster, Feta, Blue, Gorgonzola, Brie, Camembert, Havarti, and Colby, a Wisconsin original, and other fermented dairy products like buttermilk and sour cream. It is classified as a lactic acid bacterium because it ferments lactose to lactic acid. It is the by-product of these fermentations that contribute to the formation of flavor and aroma compounds, and development of ripened cheese texture and it is also important in preservation of milk products. *Lactococcus lactis* is naturally found with grasses and dairy products. *Xhe*

Wisconsin is the #1 cheese-producing state thanks to the contributions of *Lactococcus lactis*. Additionally, Wisconsin is the leading manufacturer of *Lactococcus lactis* starter culture that other cheese factories use across the nation. Of the 22.8 billion pounds of milk produced every year, over 90% goes into producing butter and 2.5 billion pounds of cheese annually, and over 90% of this cheese is sold outside of Wisconsin

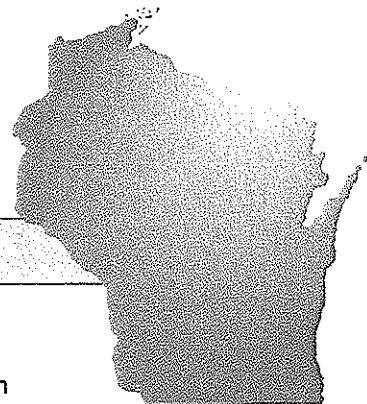
Several studies have also shown that *Lactococcus lactis* is effective as a probiotic. It is believed to stimulate the immune system and improve digestive health.

Of the 20 other state-recognized symbols, I don't think any of them have made <sup>as</sup> ~~such a~~ huge *of* contribution to Wisconsin's economy. Dairy agriculture and cheese production create more than 80,000 jobs in the state and generate \$21.5 billion dollars for the economy.

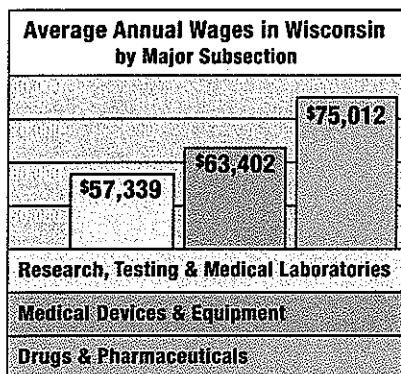
Wisconsin could greatly benefit from having a state microbe as a recognized symbol. It can be used as a valuable tool to teach children about the benefits of bacteria. It can help us to engage the public in a discussion about the role of microorganisms in general. And lastly, a state microbe will highlight the importance of the dairy industry to the state. I urge you to vote in favor of adopting *Lactococcus lactis* a new symbol of the state of Wisconsin.

# Bioforward

where innovation & opportunity connect for wisconsin



## The Wisconsin Biotechnology Industry



- **608** Biotechnology companies in Wisconsin
- **19,818** people employed by Biotechnology companies in Wisconsin
- **71,600** total employment impact in Wisconsin

Source: [www.bio.org](http://www.bio.org), State BioScience Initiatives 2008

### Representative Biotech in Wisconsin

- |                             |                     |               |                                      |
|-----------------------------|---------------------|---------------|--------------------------------------|
| • Blood Center of Wisconsin | • Covance           | • Prodesse    | • Roche Pharmaceuticals              |
| • Monsanto-Agracetus        | • GE Healthcare     | • Pharming    | • Catalent Pharma Solutions          |
| • Sigma-Aldrich Corporation | • Hologic           | • TomoTherapy | • Marshfield Clinic Applied Sciences |
| • Cardinal Health           | • Life Technologies | • PPD         | • Bruker Corporation                 |
| • Thermo Fisher Scientific  | • Clontech          | • Takeda      | • Phillips Plastics Corporation      |
| • Genzyme Corporation       | • DDN               | • Promega     | • Cambridge Major Laboratories       |

Wisconsin has been host to a variety of important scientific meetings including:

- 2008 World Stem Cell Summit
- 2009 annual meeting of the RNA Society
- 2009 Molecular Genetics of Bacteria and Phages Meeting
- 2009 International Symbiosis Society Congress

### Wisconsin's Biotechnology Industry Ranks Among Nation's Best

- **11<sup>th</sup> best** in Higher Education Degrees in Biotechnology Fields
- **13<sup>th</sup> best** in Total Academic R&D Expenditures
- **15<sup>th</sup> best** in Biotechnology R&D Expenditures
- **16<sup>th</sup> best** in NIH Funding

Source: [www.bio.org](http://www.bio.org), State BioScience Initiatives 2008

### Wisconsin Biotechnology in the News

**Genetic Engineering & Biotechnology News** (GEN) (May 2009) described Madison, Wisconsin as a region with a specialized concentration in pharmaceuticals, medical devices, agricultural feedstocks, chemicals, research and testing, and medical laboratories.

**Genome Technology** (June 2008) identified Wisconsin as one of eleven established biotech regions, along with Boston/Cambridge; Research Triangle, NC; San Diego; Singapore and the San Francisco Bay Area.

**Fierce Biotech**, an observer of the world's biotech industry, rates Wisconsin as one of the "five hottest" markets in the world.

### \$50 million

invested annually, on average, between 2002 & 2007

Source: Thomson Reuters VentureXpert Database, 2002-2007, as of 05/01/08

### Accelerate Wisconsin Tax Credit

The Wisconsin Department of Commerce has tailored a variety of funding programs for businesses and investors

- |                                      |                              |                                 |
|--------------------------------------|------------------------------|---------------------------------|
| • Early Stage Investment Tax Credits | • Technology Bridge Grants   | • Technology Venture Fund Loans |
| • Technology Assistance Grants (TAG) | • Technology Matching Grants | • Technology Development Fund   |
|                                      |                              | • Technology Development Loans  |

## Higher Education in Wisconsin

- **73** degree-granting institutions and branches
- **1,113** Ph.D.'s conferred in 2006/07
- **15.8%** increase in number of Ph.D.'s conferred in 2006/07
- **1,159** First Professional's degrees conferred in 2006/07
- **8,686** Master's degrees conferred in 2006/07
- **2,972** Bachelor's degrees conferred in 2006/07
- **333** Master's degrees conferred in 2006/07

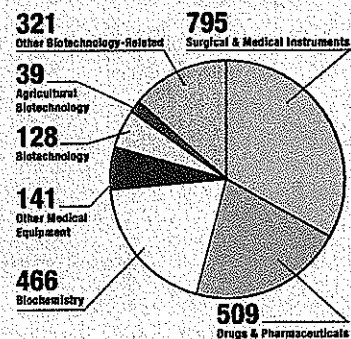
Source: U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics 2008

## Wisconsin Excels at Issuing Patents

**14<sup>th</sup> highest** state in nation in number of patents issued

Source: 2007 Development Report Card for the States: Corporation for Enterprise Development

## Nearly 2,400 Biotech-related patents Issued in Wisconsin



Source: U.S. Patent & Trademark Office data as available from Thomson Reuters' Derwent Patent Analysis Database, 2002-2007, as of May 1, 2008

## Biotechnology Products Developed in Wisconsin

### ProFlu+ — Detecting H1N1 infections

Prodesse (Milwaukee, WI) is using real-time PCR (polymerase chain reaction) technology in this simple to use and easily integrated test. ProFlu+ can give a result in as little as 3 hours – a significant improvement over culture-based methods which can take days to weeks for a result.

### Hectorol® — Helping patients with chronic kidney diseases

Hectorol (Genzyme, Middleton, WI) is indicated for the treatment of secondary hyperparathyroidism in patients with Chronic Kidney Disease. Hectorol has been clinically proven to maintain consistent serum concentrations of vitamin D hormone.

### Hi-Art® treatment system — Treating patients with cancer

The Hi-Art system (TomoTherapy, Madison, WI) integrates optimized planning, image-guidance and helical delivery to provide precise, continuous radiation therapy from all angles around the patient.

### Cervista™ — Detecting HPV

Cervista™ HPV (Hologic, Madison, WI) is a cervical cancer screening test that detects the human papillomavirus virus (HPV). The test is often used in conjunction with other standard screening methods.

### Dynabeads® — For Translational Research of T Cell Expansion

The Dynabeads® ClinExVivo™ CD3/CD28 technology (Invitrogen Dynal, Brown Deer) has been successfully used in ex vivo isolation, activation and expansion of T cells in a number of studies, including studies on HIV infection and cancer.

**Accelerator™ CF4** — A Livestock Waste Treatment Product Accelerator™ CF4 (AgTech Products, Waukesha) is a highly stable treatment product that utilizes the powerful enzyme producing activity of natural bacteria to enhance the compost process.

## The University of Wisconsin at Madison

... is one of the few research campuses in the world that **contains every link in the drug development chain**, from raw initial research to Stage III human clinical trials.

Source: *Inc Business Magazine*, Sept. 2008

... is the pioneer of embryonic stem cell research, which is why we were chosen as **the home for the National Stem Cell Bank**.

Source: [www.wiscell.org](http://www.wiscell.org)

• **3<sup>rd</sup> highest number of Ph.D.'s** conferred nationwide

• **6,859 Ph.D.'s** conferred from 1997/98 to 2006/07

• **775 Ph.D.'s** conferred in 2006/07

Source: U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics 2008

**The Wisconsin Genomics Initiative**, a collaboration of UW-Madison, Medical College of Wisconsin, UW-Milwaukee and Marshfield Clinic is designed to advance personalized medicine

**Wisconsin Alumni Research Foundation:** WARF's mission is to support scientific research at the University of Wisconsin-Madison. This is done by:

- Moving inventions arising from the university's laboratories to the marketplace for the benefit of the university, the inventors and society
- Carefully managing an endowment that WARF has grown since its inception

**BioForward** is the member-driven state association that is the voice of Wisconsin's biotechnology industry. We advocate actively on our members' behalf to create investment and partnership opportunities, attract and retain the best talent, and support public policy that fosters their continued growth. We also provide member-support services that include networking opportunities through a variety of conferences and events, online resources and group purchasing programs. Our members include biotechnology companies, universities, non-profits, service providers, and state, regional and local government representatives.

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